



National Science Foundation

4201 Wilson Boulevard
Arlington, Virginia 22230

DEAR COLLEAGUE LETTER INTERNATIONAL RESEARCH AND EDUCATION IN ENGINEERING (IREE)

SYNOPSIS

The National Science Foundation (NSF), through the Divisions in the Directorate for Engineering (ENG) and the Office of International Science and Engineering (OISE), announces the International Research and Education in Engineering (IREE) supplement opportunity. The objective of IREE is to provide opportunities for early-career researchers in the U.S. to gain international research experience and perspective, and to enhance U.S. innovation in education and research through closer interaction between U.S. institutions and their foreign counterparts. Early-career researchers are defined as undergraduate and graduate students, postdoctoral fellows, and tenure-track or tenured faculty members who are assistant or associate professors or their equivalent – who are working on current NSF awards.

The IREE offers supplemental funding to current Directorate for Engineering awards in participating divisions. IREE supports medium duration visits of between three to six months by U.S. early career researchers to collaborating institutions/laboratories outside of the U.S. The visits must be related to the objectives of ongoing work in current projects, augmented by evidence of engagement with the cultural activities in the countries visited.

PROPOSAL DEADLINE

Supplement requests must be received at NSF by Tuesday, May 29, 2007, 5 p.m. submitter's local time.

Requests received after May 29, 2007 will not be considered.

ELIGIBILITY REQUIREMENT

A. Principal Investigators

Eligible proposers are limited to current awardees of the following participating divisions in the Directorate for Engineering that include:

- Engineering Education and Centers (EEC)
- Electrical, Communications, and Cyber Systems (ECCS)
- Chemical, Bioengineering, Environmental and Transport Systems (CBET)
- Civil, Mechanical, and Manufacturing Innovation (CMMI)
- Industrial Innovation and Partnerships (IIP)

To be eligible, the expiration dates, including no-cost extensions, of active awards must fall on or after October 31, 2008. The maximum duration for IREE supplements is one (1) year. Current awardees with expiration dates falling before October 31, 2008 must contact the cognizant program officers at NSF to request a no-cost extension, before submitting the supplement proposals.

B. Traveling Researchers

Researchers traveling under an IREE award must be U.S. citizens or permanent residents of the U.S.

All undergraduate students must have research experience prior to the foreign travel under IREE. Principal Investigators may request funds to support undergraduate students under the active award before the start of foreign travel under IREE.

INTRODUCTION

The 2006-2011 NSF Strategic Plan calls for the development of a diverse, globally engaged science, technology, engineering, and mathematics (STEM) workforce to provide the skills and knowledge needed to flourish in a global knowledge economy. It also emphasizes the need with integration of research with education, and for strengthening the nation's collaborative advantage by developing unique networks and innovative partnerships.

Increasing economic globalization is making it essential that the education experience of engineering students includes a global perspective and an appreciation of the global marketplace where nations are increasingly interlinked. Today, the conceptualization, design, and manufacture of devices and systems involve global market analyses and implementation through distributed work centers and worldwide supply chains. Often, engineers are assigned overseas and must deal with foreign manufacturing units and multinational design and marketing teams. In this new environment, it is important for engineering students to be proficient in the technical subjects, informed about international technological trends and business practices, and be familiar with foreign languages and cultures.

Data from the Institute of International Education and the *Chronicle of Higher Education* show that, annually, only about one percent of U.S. students in colleges and universities go abroad on educational exchanges. Furthermore, among the students going abroad on international educational exchanges, engineering as a discipline ranks next to the lowest, surpassing only the field of agriculture. Industry, academic, and government experts generally agree that past hindrances to participation in international engineering education include the lack of proficiency in foreign languages and the perception by students that corporations do not value international experience among new hires. Many of these obstacles are fast disappearing as businesses and governments increasingly seek new employees with international expertise. The principal obstacle today lies in the lack of support for integrating international experience into the mainstream engineering programs at academic institutions.

Each year, the various divisions in the Directorate for Engineering make approximately 1,000 awards in research and education to institutions in the United States. Very few of these awards, though, provide for international activities beyond faculty attendance at international conferences or informal short-term visits to foreign laboratories.

An extended-stay visit to one or more foreign institutions/laboratories, including industrial laboratories, by early career U.S. researchers can potentially bring more direct benefit to the NSF-funded projects by fostering stronger project-based collaborative partnerships between the home and hosting laboratories, and enhancing the education experience of the students. International cooperation that is based on this type of direct linkage will enhance innovations and productivity of the research and education efforts underway in each institution/laboratory. Such a win-win scenario is made possible by a new global reality fueled by increasing investments for research and education by many foreign governments. Cooperation also promotes faster progress and spurs development in new directions.

SUPPLEMENT AWARD INFORMATION AND ALLOWABLE COSTS

NSF will accept requests for supplements to support early career researchers from current awardees to support those who have established meaningful and potentially productive contacts with their counterparts in other countries. Supplementary funding may be requested to support the incremental costs of foreign travel for U.S. early-career researchers – undergraduate and graduate students, postdoctoral fellows, and tenure-track or tenured faculty members who are assistant or associate professors or their equivalent – who are working on current NSF awards. Requests to support the travel of faculty members must also include at least one student. The participation of members of underrepresented groups is strongly encouraged. Eligible traveling researchers must be U.S. citizens or permanent residents.

NSF will provide allowances for travel expenses for the U.S. component of such collaborations. These allowances will include nominal and reasonable amounts for local research expenses at the host institutions/laboratories. The proposed foreign activities should fall within the general scope of the existing NSF-funded project for which supplemental funding is requested. Incremental participant support for international travel, including local expenses, are included. The funded time spent in foreign institutions/laboratories for each researcher must be between three (3) to six (6) months.

The participation of IIP's STTR and SBIR programs in this solicitation provides an alternate venue for funding these activities. Current Phase II grantees are encouraged to apply. SBIR/STTR grantees should address how their current developments will be enhanced by this activity. Investigators should contact officials of the SBIR/STTR programs to discuss specifics. In collaborative projects involving commercial sector partners, proposals should include a project plan with milestones that demonstrates how effective collaboration will occur.

It is expected that the major portion of the NSF funding will go toward the travel-related expenses, as noted below, of early career U.S. researchers, but can also include travel support for faculty advisors for program coordination and supervision.

As noted above, supplement requests to support the travel of researchers at the assistant or associate professor levels must also include at least one student.

General guidelines for allowable budget categories are:

- a. Up to \$1,500 transportation costs for each researcher.
- b. Local subsistence allowance of up to \$2,500 per month (for three-six months) for each researcher. NSF expects that foreign counterparts will recommend reasonable, long-term lodgings for U.S. visitors in their countries.
- c. Up to \$2,250 travel funds for faculty advisors' short visits for purposes of supervision and coordination.
- d. Up to \$1,500 for administrative expenses (in lieu of indirect costs), which must be itemized and justified, associated with the international cooperation at the foreign institution.
- e. Up to \$1,000 per month stipend for each undergraduate researcher.
- f. To encourage the recruitment of new undergraduate students into the research programs of current awards, \$6,000 per student may be requested to provide research experience to undergraduates (REU) who lack such support, prior to the foreign travel under IREE, provided the program of research (collaborators; special project; timeline; etc.) for the student is properly defined and justified in the IREE proposal.
- g. The budget must include the costs of one domestic trip for researcher(s) and faculty advisor to travel to Washington, D.C. to attend and present a report at a post-visit three-day workshop/conference to be held in October 2008.

All supplement awards are subject to the availability of funds, review of the quality of proposals, and division program acceptance.

Indirect costs are not allowed. The supplement request and the budget must be submitted through FastLane. See instructions below.

INSTRUCTIONS FOR PREPARING SUPPLEMENT REQUESTS

Principal Investigators must contact the NSF program officer responsible for their grants to be supplemented in advance of submitting a request. The request must be submitted by accessing the current award through FastLane via the "SUPPLEMENT" button. By default, the title of the request will be identical to the title of the current award.

The supplement request must describe the U.S. part of the cooperative project in sufficient detail to enable the program officer and reviewers to evaluate (1) its intellectual merit and (2) the broader impacts of the proposed activity. In addition to these review criteria, NSF will take into consideration the value added by the proposed international cooperation, and the extent to which the proposal integrates research and education and promotes diversity.

The request must include the following sections:

1. Proposal Summary (limit: one page): A proposal summary or abstract that begins with the title of the current award. Provide a brief summary of the current award, and the proposed international collaboration under IREE. The summary must explicitly address the intellectual merit and broader impacts of the international component.
2. Proposed Research (limit: five pages): A section on proposed research that elaborates on the information given in proposal summary. Provide a concise, substantive description of the proposed plan for research and general interaction between the U.S. researchers and the foreign partners, including the anticipated benefits of the plan and how the proposed interaction with the foreign institutions/laboratories could be leveraged to foster even closer future collaborations. Do not simply reproduce sections from your previous proposal. This summary should comment specifically on the researchers' activities in the foreign country, and show how the proposed research program is within the current scope of work at the home institution in the U.S. or is meant to extend it. Activities aimed at increasing the researchers' familiarity with the foreign language, culture, and applicable technological trends and business practices should be included also. Provide separate paragraphs for intellectual merit and broader impacts. At the end of this section, the following information on the current award must be included:
 - a. The award number:
 - b. Award duration:
 - c. Starting date:
 - d. Termination date:
 - e. Whether no-cost extension to October 31, 2008 has been requested, if applicable (to enable attendance of post-trip workshop; see Expected Deliverables below) (Yes or No):
 - f. Current award amount:
 - g. Names of travelers and whether citizens/permanent residents (Y/N):
 - h. Dates of proposed travel:
 - i. Destination country:
3. Program for Undergraduate Research (limit: two pages): If the \$6,000 per student funding is requested to provide research experience to an undergraduate student prior to the foreign travel, provide a description of the research program and its timing for such student.
4. Information on Foreign Counterpart (limit one page): A section on the foreign counterpart that provides information clearly identifying the foreign counterpart institutions/laboratories, and a brief description of the research focus and recent accomplishments.
5. Letter from Foreign Institution: A letter from the coordinator of the foreign institution/laboratory certifying its agreement to accept the U.S. researcher(s) as proposed in the supplement request.

6. Selection of U.S. Researcher(s) (limit: one page): A brief description of the process and criteria for selection of the U.S. researcher(s). If a researcher (must be U.S. citizen or permanent resident) has been selected, then the grounds for selection and a brief biographical sketch of the researcher should be included. Also describe how the proposed researchers will be prepared for the visit. Describe any program of orientation/instruction that will be done before, during, and after the visit.
7. Budget Justification: A proposed budget and budget justification.

It is the responsibility of the U.S. institution requesting the supplement to obtain passports, visas, and any other documents needed for the international travel.

Requests must be submitted through FastLane in accordance with Chapter II.D.2.b of the NSF Grant Proposal Guide, available at:

http://www.nsf.gov/publications/pub_summ.jsp?ods_key=nsf07140

In preparing the budget, refer to NSF Award and Administration Guide Chapter V, accessing through the above URL.

Costs should be budgeted under Participant Support (for students) or Travel (for faculty and post-docs) as applicable.

PROPOSAL EVALUATION

All eligible proposals received by the due date will be reviewed by NSF program officers in the Directorate for Engineering and the Office of International Science and Engineering using NSF merit review criteria; see Chapter III.A of the Grant Proposal Guide accessible through the URL given above. Proposals received after the due date and those not meeting the conditions specified in this Dear Colleague Letter will not be considered.

EXPECTED DELIVERABLES

Within three months after completion of the trip, faculty advisors and researchers are expected to prepare a trip report to be submitted to NSF that details the experience of the trip, and to later present their report at a post-visit workshop/conference in Washington, D.C. The format for the report will be furnished by NSF. The workshop is planned to be held in October, 2008.

The report must be submitted to the IREE program office by e-mail to waung@nsf.gov, with a copy to the cognizant program officer.

CONTACTS

If you are interested in submitting a supplemental request, you must contact your NSF program officer. If you have questions concerning this solicitation, please contact one of the NSF staff listed below:

Win Aung, Division of Engineering Education and Centers, Directorate for Engineering, (703) 292-5341. E-mail: waung@nsf.gov.

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